PART I
Installation

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Installing Windows 7

IN THIS CHAPTER, YOU WILL LEARN TO:

- **UNDERSTAND WINDOWS 7'S NEW FEATURES (Pages 4–7)**
- **UNDERSTAND WINDOWS 7 ARCHITECTURE (Pages 7–9)**
- **PREPARE TO INSTALL WINDOWS 7 (Pages 9–22)**
- **INSTALL WINDOWS 7 (Pages 22–45)**

There is an old saying: "To build a good house, you must have a good foundation." Well, that's what this chapter is all about. You'll learn how to properly install Windows 7. We'll show you how to install Windows 7 on one machine and then install Windows 7 on multiple machines using various installation techniques and tools.

With each release of Microsoft Windows, Microsoft tries to take the best of the previous Windows versions and add even better functionality. This is no different with Windows 7. Let's start by looking at some of the features in Windows 7.

Understand Windows 7's New Features

Windows 7 has resolved many of the problems that plagued Windows Vista. Windows 7 has a much faster boot time and shutdown compared to Windows Vista. It is also easier to install and configure.

The Windows 7 operating system functions are also faster than its previous counterparts. Opening, moving, extracting, compressing, and installing files and folders are more efficient than previous versions of Microsoft's client operating systems.

Let's take a look at some of the improvements and features of Windows 7. This is just an overview of some of its benefits.

Windows 7 Taskbar In the previous versions of Windows, you had a Quick Launch bar on the left side and on the right side you could see which programs were loaded and running. The Quick Launch bar has been replaced by the Windows 7 Taskbar and Jump List. The Taskbar is shown in Figure 1.1.

Figure 1.1: Windows 7 Taskbar

The Windows Taskbar allows users to quickly access the programs they use the most. One advantage to having the applications on the Windows 7 Taskbar is that you have fewer icons on the Desktop, thus allowing for a more manageable desktop environment.

Jump Lists Jump Lists are a new feature to the Windows lineup. They allow you to quickly access files that you have been working on. For example, if you have the Microsoft Word icon in the Taskbar, you can right-click it and it will show you all the recent files that you have been working with.

Another advantage to using Jump Lists is that you can preset certain applications, like Windows Media Player. For Internet Explorer, you could view all the recent websites that you have visited.

New Preview Pane Windows XP and Windows Vista have a Preview pane, but Windows 7 has improved on the Preview pane by allowing you to view text files, music files, pictures files, HTML files, and videos. Another new advantage is if you have installed Microsoft Office and Adobe Acrobat Reader, you also have the ability to view Office and PDF files.

Windows Touch Windows Touch is one of the coolest features included with Windows 7. It allows you to control the operating system and its applications by using a touchscreen.

For example, you can open a picture and then move it around, make it larger or smaller, or place it anywhere on the Desktop—all with the touch of your fingertips on the screen.

Touchscreens are included on laptops, tabletops, GPS devices, phones, and now on the Windows 7 operating system.

Windows XP Mode Microsoft realizes that many organizations are running Windows XP. Also, many of these same organizations run older applications on these Windows XP systems. This is where Windows XP Mode comes into play. Windows XP Mode gives an organization that chooses to upgrade to Windows 7 the ability to run older Windows XP applications on their new system.

To run Windows XP Mode, Windows 7 uses virtualized technology to run a virtual XP operating system to allow the organization to use the older applications.

HomeGroup Networking Windows 7 networking has been made easier with the improvement of HomeGroups. HomeGroups are an easy way to set up a network using Windows 7. Windows 7 searches for your home network, and if one is found, it connects after you enter the HomeGroup password.

If a home network is not found, a networking wizard automatically creates a password for the HomeGroup. This password lets you

connect all your other computers to the same network. The password can be changed any time after you install Windows 7.

Device Stage Device Stage is new to the Windows operating systems family. Device Stage enables you to connect a compatible device to your PC and a picture of the device appears. Device Stage allows you to easily share files between devices and computers.

Before Windows 7 Device Stage, when you connected a device to the PC, you might have seen multiple devices appear. For example, when you added a multifunction printer (printer, scanner, and copier), the device might have been added as three separate devices. Device Stage helps resolve this issue.

Another feature of Device Stage is that the device vendors can customize the icons for Device Stage, so that the same multifunction printer can have the ability to order ink from Device Stage.

View Available Networks (VAN) If you have used a laptop, you have used this feature. When you use a wireless network adapter and you right-click the icon in the system tray, you can choose the wireless network that you want to connect to. You connect to a wireless network through the wireless network adapter. Now that same functionality is built into the Windows 7 operating system.

Windows Internet Explorer 8 Windows 7 includes the newest version of Internet Explorer (IE8). IE8, as shown in Figure 1.2, allows a user to work faster and more efficiently on the Internet due to new search features, address bars, and favorites.

Figure 1.2: Internet Explorer 8 lets you work faster and more efficiently.

Some of the new features of IE8 include:

Instant Search This feature lets you quickly access search requests without typing the entire search criteria. As you start typing in the search request, you'll see suggestions for your search.

The advantage to Instant Search is that it will also use your browsing history to narrow down the suggestions. After you see what you're looking for, you can make your selection without having to finish the query.

Accelerators This new feature allows you to accelerate actions on Internet services and applications. For example, if you are looking for a street address and you click the blue Accelerator icon, a map will appear right there on the screen.

Microsoft Accelerators can be used for email, searching, and so forth. Also, other websites like eBay and Facebook offer Accelerators for their services.

Web Slices Web Slices are instances on a website that you want to access without accessing the site. For example, say you want to get stock quotes, sports scores, or auction items without visiting the sites; this is the advantage of using Web Slices. As the information that you are watching changes, the updates will show immediately.

Understand Windows 7 Architecture

Windows 7 is built on the Windows Vista core, but Windows 7 has limited the files that load at startup to help with the core performance of the operating system. They have also removed many of the fluff items that Windows Vista used, thus allowing for better performance.

When Microsoft first released Windows 7 as a beta, there was a 64-bit version but no 32-bit version. This did not go over well with the Internet bloggers. I even saw a petition online to have a 32-bit version released.

The funny thing is that I also saw a petition asking Microsoft not to release a 32-bit version. The logic behind this was it would force users and manufacturers to upgrade everything to 64-bit. In response, Microsoft has released Windows 7 as both a 32-bit and a 64-bit version.

Microsoft could not just release a 64-bit version of Windows 7. This would alienate many users with 32-bit computer systems, and it would cost Microsoft a large share of the client-side software market. Users already have to deal with the PC versus Mac commercials! So Windows 7 users have a choice of either 32-bit or 64-bit.

32-bit vs. 64-bit

When you hear the terms *32-bit* and *64-bit*, this is referring to the CPU, or processor. The number represents how the data is processed. It is processed either as 2^32 or as 2^64. The larger the number, the larger the amount of data that can be processed at any one time.

Think of a large highway that has 32 lanes. Vehicles can travel on those 32 lanes only. When traffic gets backed up, they can only use these lanes, and this can cause traffic delays. But now think of a 64-lane highway and how many more vehicles can travel on that highway. This is an easy way of thinking of how 32-bit and 64-bit processors operate.

The problem here is that if you have a 32-lane highway, you can't just set up 64 vehicles on this highway and let them go. You need to have the infrastructure to allow for 64 vehicles by having 64 lanes. This is the same with computers. Your computer has to be configured to allow you to run a 64-bit processor.

So what does all of this mean to the common user or administrator? Well, it's all about RAM. A 32-bit operating system can handle up to 4 GB of RAM and a 64-bit processor can handle up to 16 exabytes of RAM. The problem here is that Windows and most motherboards can't handle this much RAM.

None of this is new—64-bit is just starting to become accepted with Windows, but other operating systems, like Apple, have been using 64-bit processors for many years.

So should you switch all of your users to 64 bit? The answer is no. Most users do not need to have large amounts of RAM, and the real problem here is that many manufacturers do not have 64 bit–compliant components.

For example, I am writing this book on a 64-bit computer, but if I open Internet Explorer and go to any website that uses Adobe Flash Player, it will not work. Currently, Adobe does not have a 64-bit Flash Player.

NOTE Computer processors are typically rated by speed. The speed of the processor, or CPU, is rated by the number of clock cycles that can be performed in one second. This measurement is typically expressed in gigahertz (GHz). One GHz is one billion cycles per second. Keep in mind that processor architecture must also be taken into account when considering processor speed. A processor with a more efficient pipeline will be faster than a processor with a less efficient pipeline at the same CPU speed.

Prepare to Install Windows 7

Installing Windows 7 is simple, thanks to the installation wizard. The wizard walks you through the entire installation of the operating system.

The hardest part of installing Windows 7 is preparing and planning for the installation. One saying that I teach to IT professionals is "An hour of planning will save you days of work." Planning a Windows 7 rollout is one of the most important tasks that you will perform when you install Windows 7.

You must make many decisions before you insert the Windows 7 media into your machine. The first decision is which edition of Windows 7 you want to install.

The user's job function or requirements may determine which edition of Windows 7 you should use. Do they need their computer for home use or just work? These are some of the factors that you'll take into account when deciding which edition of Windows 7 to install. Let's take a look at the various editions of Windows 7.

Windows 7 Editions

Microsoft offers six editions of the Windows 7 operating system. This allows an administrator to custom-fit a user's hardware and job function to the appropriate edition:

- Windows 7 Starter
- Windows 7 Home Basic
- Windows 7 Home Premium

- Windows 7 Professional
- Windows 7 Enterprise
- Windows 7 Ultimate

Many times Microsoft releases multiple editions of the operating system contained within the same Windows 7 media disk. You can choose to unlock the one that you want based on the product key that you have.

Table 1.1 compares all the Windows 7 editions and lists what they include. We compiled this information from Microsoft's website and TechNet. This table is only a partial representation of all the features and applications that are included.

Table 1.1: Windows 7 Edition Comparison

	Starter Edition	Home Basic Edition	Home Premium Edition	Professional Edition	Enterprise and Ultimate Editions
Processor (32-bit or 64-bit)	Both	Both	Both	Both	Both
Multiprocessor support	No	No	Yes	Yes	Yes
32-bit maximum RAM	4 GB	4 GB	4 GB	4 GB	4 GB
64-bit maximum RAM	8 GB	8 GB	16 GB	192 GB	192 GB
Windows HomeGroup	Yes	Yes	Yes	Yes	Yes
Jump Lists	Yes	Yes	Yes	Yes	Yes
Internet Explorer 8	Yes	Yes	Yes	Yes	Yes
Media Player 12	Yes	Yes	Yes	Yes	Yes
System Image	Yes	Yes	Yes	Yes	Yes
Device Stage	Yes	Yes	Yes	Yes	Yes
Sync Center	Yes	Yes	Yes	Yes	Yes
Windows Backup	Yes	Yes	Yes	Yes	Yes

Table 1.1: Windows 7 Edition Comparison *(continued)*

	Starter Edition	Home Basic Edition	Home Premium Edition	Professional Edition	Enterprise and Ultimate Editions
Remote Desktop	Yes	Yes	Yes	Yes	Yes
ReadyDrive	Yes	Yes	Yes	Yes	Yes
ReadyBoost	Yes	Yes	Yes	Yes	Yes
Windows Firewall	Yes	Yes	Yes	Yes	Yes
Windows Defender	Yes	Yes	Yes	Yes	Yes
Taskbar previews	No	Yes	Yes	Yes	Yes
Mobility Center	No	Yes	Yes	Yes	Yes
Easy user switching	No	Yes	Yes	Yes	Yes
Windows Aero Glass	No	No	Yes	Yes	Yes
Multi-touch	No	No	Yes	Yes	Yes
DVD playback	No	No	Yes	Yes	Yes
Windows Media Center	No	No	Yes	Yes	Yes
XP Mode	No	No	No	Yes	Yes
Encrypting File System (EFS)	No	No	No	Yes	Yes
BitLocker	No	No	No	No	Yes
AppLocker	No	No	No	No	Yes
BranchCache	No	No	No	No	Yes
DirectAccess	No	No	No	No	Yes

Now that you have seen what each edition of Windows 7 can accomplish, let's take a look at the hardware requirements needed to install Windows 7.

Hardware Requirements

Before you can insert the Windows 7 DVD and install the operating system, you first must make sure that the machine's hardware can handle the Windows 7 operating system.

To install Windows 7 successfully, your system must meet or exceed certain hardware requirements. Table 1.2 lists the requirements for a Windows 7–compatible PC.

Table 1.2: Hardware Requirements

Component	Requirements
CPU (processor)	1 GHz 32-bit or 64-bit processor
Memory (RAM)	1 GB of system memory
Hard disk	16 GB of available disk space
Video adapter	Support for DirectX 9 graphics with 128 MB of memory (to enable the Aero theme)
Optional drive	DVD-R/W drive
Network device	Compatible network interface card

NOTE The hardware requirements listed in Table 1.2 were those specified as of this writing. Always check Microsoft's website at `www.microsoft.com/windows7` for the most current information.

The Windows 7–compatible PC must meet or exceed the basic requirements to deliver the core functionality of the Windows 7 operating system. These requirements assume that you're installing only the operating system without any premium functionality. For example, you may be able to get by with the minimum requirements if you're installing the operating system just to learn the basics of the software. Remember, the better the hardware, the better the performance.

Besides the basic hardware requirements that are needed to install Windows 7, the requirements for the graphic card depend on the resolu-

tion at which you want to run. The required amount of memory is as follows:

- 64 MB is required for a single monitor at a resolution of 1,310,720 pixels or less, which is equivalent to a 1280×1024 resolution.
- 128 MB is required for a single monitor at a resolution of 2,304,000 pixels or less, which is equivalent to a 1920×1200 resolution.
- 256 MB is required for a single monitor at a resolution larger than 2,304,000 pixels.

In addition, the graphics memory bandwidth must be at least 1,600 MB per second, as assessed by the Windows 7 Upgrade Advisor.

Setting the hardware requirements for Windows 7 on your machine can sometime be a difficult task. You may ask yourself, "Does the hardware you currently have support Windows 7?" Microsoft understands this concern and has a tool called the Hardware Compatibility List to help you figure out whether your machines will work with Windows 7.

The Hardware Compatibility List

Along with meeting the minimum requirements, your hardware should appear on the Hardware Compatibility List (HCL). The HCL (also referred to as the Windows Logo'd Products List) is an extensive list of computers and peripheral hardware that have been tested with the Windows 7 operating system.

The Windows 7 operating system requires control of the hardware for stability, efficiency, and security. The hardware and supported drivers on the HCL have been put through rigorous tests to ensure their compatibility with Windows 7. Microsoft guarantees that the items on the list meet the requirements for Windows 7 and do not have any incompatibilities that could affect the stability of the operating system.

If you call Microsoft for support, the first thing a Microsoft support engineer will ask about is your configuration. If you have any hardware that is not on the HCL, you may not be able to get support from Microsoft.

To determine if your computer and peripherals are on the HCL, check the most up-to-date list at `http://winqual.microsoft.com/HCL/Default.aspx`.

The HCL will let you know if your hardware is compatible with Windows 7. Besides the basic RAM, video, hard drive, and CPU requirements, there are some other areas of the computer that you should examine for compatibility.

BIOS Compatibility

Before you install Windows 7, verify that your computer has the most current BIOS (Basic Input/Output System). This is especially important if your current BIOS doesn't include support for Advanced Configuration and Power Interface (ACPI) functionality. ACPI functionality is required for Windows 7 to function properly. Check the computer's vendor for the latest BIOS version information.

Driver Requirements

To successfully install Windows 7, you must have the critical device drivers for your computer, such as the hard drive device driver. The Windows 7 media comes with an extensive list of drivers. If your computer's device drivers are not on the Windows 7 installation media, check the device manufacturer's website. If you can't find the device driver on the manufacturer's website and no other compatible driver exists, you are out of luck. Windows 7 won't recognize devices that don't have Windows 7 drivers.

If your hardware does not have drivers for Windows 7, be sure to check the hardware manufacturers' websites often because new drivers for Windows 7 are released frequently.

After you have made sure that the hardware for your machine is compatible for Windows 7, the next decision to make is how you're going to install the operating system.

New Install or Upgrade?

When installing Windows 7, you have two choices: you can install a fresh copy of Windows 7 or you can upgrade from Windows Vista.

An upgrade allows you to retain your existing operating system's applications, settings, and files. If you currently have a computer with Windows Vista, you are eligible to use an upgrade copy of Windows 7.

However, the bad news is you must always perform a clean install with Windows XP or earlier editions of Windows. You can, however, use the Windows Easy Transfer utility to migrate files and settings from Windows XP to Windows 7 on the same computer.

Another possibility is to upgrade your Windows XP machine to Windows Vista and then upgrade the new Vista operating system to Windows 7.

You can perform an upgrade to Windows 7 if the following conditions are true:

- You are running Windows Vista.
- You want to keep your existing applications and preferences.
- You want to preserve any local users and groups you've created.

You must perform a clean install of Windows 7 if any of the following conditions are true:

- There is no operating system currently installed.
- You have an operating system installed that does not support an in-place upgrade to Windows 7 (such as DOS, Windows 9*x*, Windows NT, Windows Me, Windows 2000 Professional, or Windows XP).
- You want to start from scratch, without keeping any existing preferences.
- You want to be able to dual-boot between Windows 7 and your previous operating system.

Table 1.3 shows the Vista operating systems that can be upgraded and to which edition of Windows 7 each should be updated to.

Table 1.3: Windows Vista Upgrade Options

Windows Vista Edition	Windows 7 Edition
Home Basic Edition	Home Basic Edition
Home Premium Edition	Home Premium Edition
Business Edition	Professional Edition
Ultimate Edition	Ultimate Edition

Before you decide if you should upgrade or install a clean Windows 7 operating system, let's take a look at some of the things you need to consider about upgrades.

Upgrade Considerations

Almost all Windows Vista applications should run with the Windows 7 operating system. However, there are a few possible exceptions to this statement:

- Applications that use file system filters, such as antivirus software, may not be compatible.
- Custom power-management tools may not be supported.

Before you upgrade to Windows 7, be sure to stop any antivirus scanners, network services, or other client software. These software packages may see the Windows 7 install as a virus and cause installation issues.

If you're performing a clean install to the same partition as an existing edition of Windows, the contents of the existing Users (or Documents and Settings), Program Files, and Windows directories will be placed in a directory named Windows.old, and the old operating system will no longer be available.

Hardware Compatibility Issues

Ensure that you have Windows 7 device drivers for your hardware. If you have a video driver without a Windows 7–compatible driver, the Windows 7 upgrade will install the Standard VGA driver, which will display the video with an 800×600 resolution. After you get the Windows 7 driver for your video, you can install it and adjust video properties accordingly.

Application Compatibility Issues

Not all applications that were written for earlier editions of Windows will work with Windows 7. After the upgrade, if you have application problems, you can address the problems as follows:

- If the application is compatible with Windows 7, reinstall the application after the upgrade is complete.
- If the application uses dynamic link libraries (DLLs) and there are migration DLLs for the application, apply the migration DLLs.
- Use the Microsoft Application Compatibility Toolkit (ACT) to determine the compatibility of your current applications with Windows 7. ACT will determine which applications are installed,

identify any applications that may be affected by Windows updates, and identify any potential compatibility problems with User Account Control (UAC) and Internet Explorer. Reports can be exported for detailed analysis.

- If applications were written for earlier editions of Windows but are incompatible with Windows 7, use the Windows 7 Program Compatibility Wizard. From Control Panel click the Programs icon and then click the Run Programs From Previous Versions link to start the Program Compatibility Wizard.
- If the application is not compatible with Windows 7, upgrade your application to a Windows 7–compliant version.

Windows 7 Upgrade Advisor

To assist you in the upgrade process, the Windows 7 Setup program can check the compatibility of your system, devices, and installed applications and then provide the results to you. You can then analyze these results to determine whether your hardware or software applications will port properly from the Windows Vista edition to Windows 7.

You can download the Windows 7 Upgrade Advisor from Microsoft's website at `www.microsoft.com/downloads`. The Windows 7 Upgrade Advisor is compatible with Windows 7, Windows Vista, and Windows XP with Service Pack 2 or higher.

When you're running the Upgrade Advisor on a machine running Windows XP, if you do not have .NET Framework 2.0, you are asked to download and install it. After the .NET Framework is installed, you can restart the Upgrade Advisor installation.

After your computer is scanned, the Upgrade Advisor determines whether any incompatibilities exist between your computer and Windows 7. It also tells you which edition of Windows 7 seems to be best for your computer. However, you are by no means limited to upgrading to the recommended edition. The Upgrade Advisor Compatibility reports are broken up into the following three categories:

System Requirements The System Requirements report alerts you to any shortcomings your system might have when running certain editions of Windows Vista. For example, our lab computer should have no problems accessing all the features of Windows Vista Business, but it won't be able to access all the features of Windows Vista Home Premium or Windows Vista Ultimate because it doesn't have a TV tuner card.

Devices The Devices report alerts you to any potential Windows Vista driver issues. Each device in your system will be listed in this section either as a device to be reviewed or as a device that should automatically work after Windows 7 is installed. You will need a driver for the network card after Windows 7 is installed.

Programs The Programs report alerts you to any potential application compatibility issues.

You can also save or print a task list that tells you the most compatible Windows 7 edition, your current system configuration, and the steps you need to take before and after you install Windows 7.

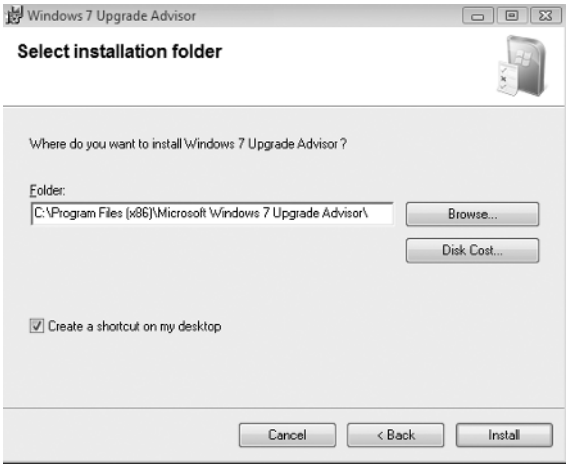
Perform the following steps to download and run the Windows 7 Upgrade Advisor:

1. Go to `www.microsoft.com/downloads` and download the Windows 7 Upgrade Advisor.
2. After the download is complete, run the `.msi` installation.
3. The Windows 7 Upgrade Advisor Setup Wizard starts, as shown in Figure 1.3. Click the Next button.

Figure 1.3: Upgrade Advisor Setup Wizard

4. Accept the licensing terms and click Next.
5. At the Select Installation Folder screen, accept the defaults or choose a directory location where you want this program installed, as shown in Figure 1.4. Click Install.

Figure 1.4: The Select Installation Folder screen



6. At the Installation Complete screen, click the Close button.
7. On the desktop, double-click the Windows 7 Upgrade Advisor icon.
8. When the Windows 7 Upgrade Advisor starts, click the Start Check button to start the scan of the machine.
9. After the system scan is complete, the Upgrade Advisor gives you the results. You can print or save these results. Close the Upgrade Advisor.

An Upgrade Checklist

After you make the decision to upgrade, you should develop a plan of attack. The following upgrade checklist (valid for upgrading from Windows Vista) will help you plan and implement a successful upgrade strategy:

- Verify that your computer meets the minimum hardware requirements for Windows 7.
- Be sure that your hardware is on the HCL.
- Make sure you have the Windows 7 drivers for the hardware. You can verify this with the hardware manufacturer.
- Run the Windows 7 Upgrade Advisor tool from the Microsoft website, which also includes documentation on using the utility,

to audit the current configuration and status of your computer. It will generate a report of any known hardware or software compatibility issues based on your configuration. You should resolve any reported issues before you upgrade to Windows 7.

- Make sure that your BIOS is current. Windows 7 requires that your computer has the most current BIOS. If it does not, the computer may not be able to use advanced power-management features or device-configuration features. In addition, your computer may cease to function during or after the upgrade. Use caution when performing BIOS updates, as installing the incorrect BIOS can cause your computer to fail to boot.
- Take an inventory of your current configuration. This inventory should include documentation of your current network configuration, the applications that are installed, the hardware items and their configuration, the services that are running, and any profile and policy settings.
- Back up your data and configuration files. Before you make any major changes to your computer's configuration, you should back up your data and configuration files and then verify that you can successfully restore your backup. Chances are if you have a valid backup, you won't have any problems.
- Delete any unnecessary files or applications, and clean up any program groups or program items you don't use. Theoretically, you want to delete all the junk on your computer before you upgrade. Think of this as the spring-cleaning step.
- Verify that there are no existing problems with your drive prior to the upgrade. Perform a disk scan, a current virus scan, and defragmentation. These, too, are spring-cleaning chores. This step just prepares your drive for the upgrade.
- Perform the upgrade.
- Verify your configuration. After Windows 7 has been installed, use the inventory to compare and test each element that was previously inventoried prior to the upgrade to verify that the upgrade was successful.

When you install Windows 7, you must decide how you want to partition the disk drive that the Windows 7 operating system will reside on.

Disk Space Partitioning

Disk partitioning is the act of taking the physical hard drive and creating logical partitions. A logical drive is how space is allocated to the drive's primary and logical partitions. For example, if you have a 500 GB hard drive, you might partition it into three logical drives: a C drive, which might be 200 GB; a D drive, which might be 150 GB; and an E drive, which might be 150 GB.

Some of the major considerations for disk partitioning are as follows:

- The amount of space required
- The location of the system and boot partition
- Any special disk configurations you will use
- The utility you will use to set up the partitions

Partition Size One important consideration in your disk-partitioning scheme is determining the partition size. You need to consider the amount of space taken up by your operating system, the applications that will be installed, and the amount of stored data. It is also important to consider the amount of space required in the future.

Microsoft recommends that you allocate at least 16 GB of disk space for Windows 7. This allows room for the operating system files and for future growth in terms of upgrades and installation files that are placed with the operating system files.

System and Boot Partitions When you install Windows 7, files will be stored in two locations: the system partition and the boot partition. The system partition and the boot partition can be the same partition.

The system partition contains the files needed to boot the Windows 7 operating system. The system partition contains the Master Boot Record (MBR) and boot sector of the active drive partition. It is often the first physical hard drive in the computer and normally contains the necessary files to boot the computer. The files stored on the system partition do not take any significant disk space. The active partition is the system partition that is used to start your computer. The C drive is usually the active partition.

The boot partition contains the Windows 7 operating system files. By default, the Windows operating system files are located in a folder named `Windows`.

Special Disk Configurations Windows 7 supports several disk configurations. Options include simple, spanned, and striped volumes.

Disk Partition Configuration Utilities If you are partitioning your disk prior to installation, you can use several utilities, such as the DOS or Windows Fdisk program or a third-party utility such as Norton's Partition Magic. You can also configure the disks during the installation of the Windows 7 operating system.

You might want to create only the first partition where Windows 7 will be installed. You can then use the Disk Management utility in Windows 7 to create any other partitions you need.

Another configuration option that you must set when you install Windows 7 is where the computer system files will reside after the install is complete.

Install Windows 7

You can install Windows 7 either from the bootable DVD or through a network installation using files that have been copied to a network share point. You can also launch the `setup.exe` file from within the Windows Vista operating system to upgrade your operating system.

The Windows 7 DVD is bootable. To start the installation, simply restart your computer and boot to the DVD. The installation process begins automatically. I will walk you through the steps of installing Windows 7 later in this chapter.

If you are installing Windows 7 from the network, you need a distribution server and a computer with a network connection. A distribution server is a server that has the Windows 7 distribution files copied to a shared folder.

Perform the following steps to install Windows 7 over the network:

1. Boot the target computer.
2. Attach to the distribution server and access the share that has the files copied to it.
3. Launch `setup.exe`.
4. Complete the Windows 7 installation using either the clean install method or the upgrade method.

These methods are discussed in detail in the following sections.

Performing a Clean Install of Windows 7

On any installation of Windows 7, there are three phases to the installation. First you have the Collecting Information phase, then the Installing Windows phase, and finally the Setting Up Windows phase.

Collecting Information During the collection phase of the installation, Windows 7 gathers the information necessary to complete the installation. This is where Windows 7 gathers your local time, location, keyboard, license agreement, installation type, and installation disk partition information.

Installing Windows This section of the installation is where your Windows 7 files are copied to the hard disk and the installation is completed. This phase takes the longest as the files are installed.

Setting Up Windows This phase of the setup is where you set up a username, computer name, and password; enter the product key and security settings; and review your date and time settings. After this is finished, your installation will be complete.

You can run the installation from the optical media or over a network. The only difference in the installation procedure is your starting point: from your optical drive or from a network share. The steps in the following sections assume you are using the Windows 7 DVD to install Windows 7.

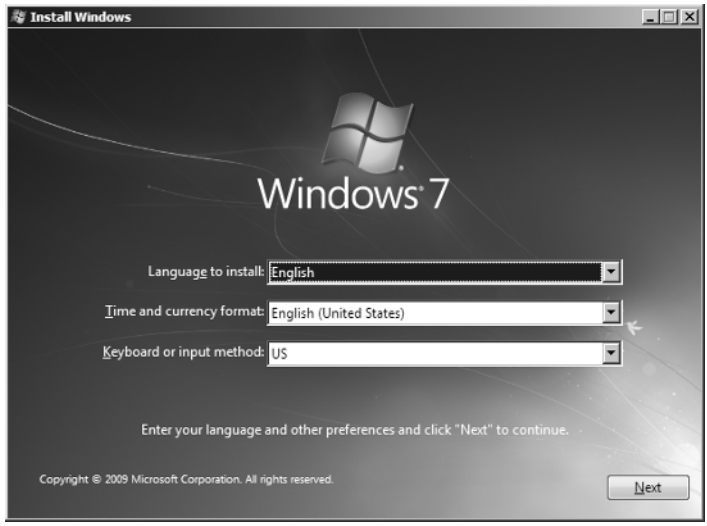
When you boot to the Windows 7 installation media, the Setup program automatically starts the Windows 7 installation.

Before you begin any of the procedures, verify that you have access to Windows 7 Ultimate; other editions might vary slightly. You can also download an evaluation edition of Windows 7 from Microsoft's website at `www.microsoft.com/windows7`.

Perform the following steps for a clean install of Windows 7:

1. Insert the Windows 7 DVD into the machine and start the computer.
2. If you are asked to Hit Any Key to start the DVD, press Enter.
3. The first screen asks you to select your language, local time, and keyboard. After filling in these fields, click Next, as shown in Figure 1.5.

Figure 1.5: Windows 7 Installation screen



4. At the next screen, click the Install Now button, as shown in Figure 1.6.

Figure 1.6: Windows 7 Install Now screen

5. A message shows you that Setup is starting. The licensing screen will be first. Read and accept the license agreement and then click Next.
6. A screen asking you "Which type of installation do you want?" is next, as shown in Figure 1.7. Click Custom (Advanced).

Figure 1.7: Choosing the Windows 7 installation type

7. The next screen asks you where you want to install Windows 7, as shown in Figure 1.8. Choose an unformatted free space or a partition (the partition will be erased) with at least 16 GB available. You can also click the Drive Options (Advanced) link to create your own partition. After you choose your partition, click Next.
8. After your partition is set, the installation starts. You see the progress of the installation during the entire process. After the installation is complete, the machine reboots.
9. After the installation is complete, the username and computer name screen appears, as shown in Figure 1.9. Type in your username and computer name and click Next.

Figure 1.8: Specify a location for installing Windows 7.

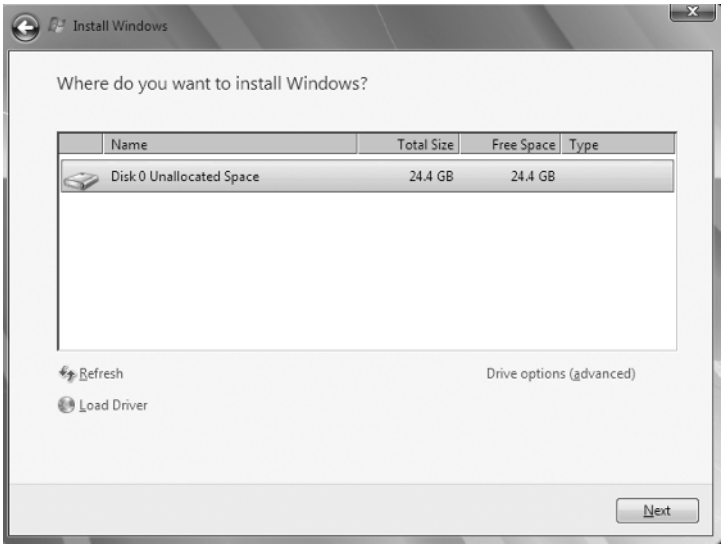
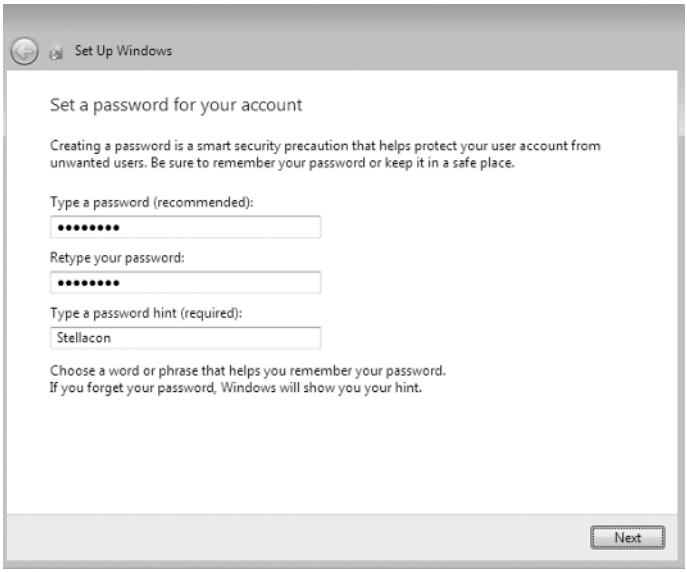


Figure 1.9: Adding a username and computer name

10. Next, set your password and password hint, as shown in Figure 1.10. Enter your password twice and enter your hint. Click Next.

Figure 1.10: Password screen

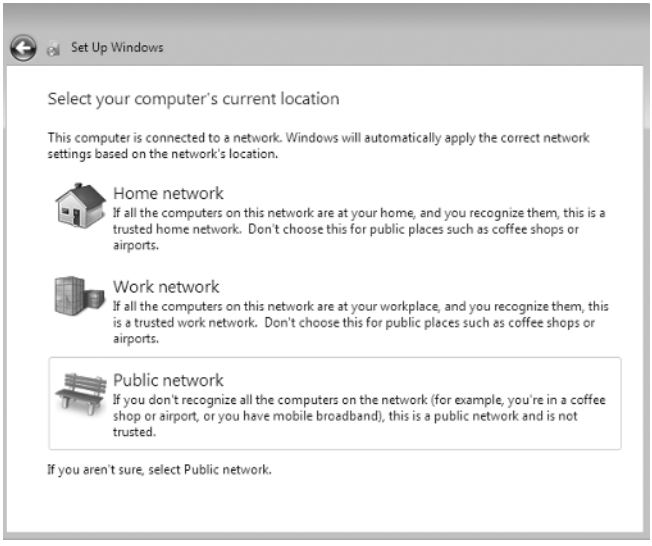


11. The next screen asks you to enter your 25-digit product key. Enter your product key and make sure the check box to automatically register your machine when you're online is selected. Click Next.
12. Settings related to Windows Update and security appear, as shown in Figure 1.11. You can select Use Recommended Settings or Install Important Updates For Windows Only, or have the computer ask you later. If you select the option to use the recommended settings, the following settings are configured:
    - Windows Update will be enabled and updates will automatically install.
    - Windows Defender will be installed and any collected information will be sent to Microsoft.
    - Errors will automatically be sent to Microsoft.
    - The latest drivers for your hardware will automatically be downloaded from Windows Update.

Figure 1.11: Specify settings related to Windows Update and security.

13. You are now able to verify your time and date settings. Configure your time, time zone, and date. Click Next.
14. You then set your computer's current location. You have the ability to choose from a home, work, or public location. Choose where your computer is located, as shown in Figure 1.12.

Figure 1.12: Choosing a network location



15. Windows will finalize your setup and the installation will be complete.

As you can see, installing Windows 7 is an easy process on a new computer system. But what if the system already has Windows Vista? Let's take a look at how to perform an installation of Windows 7 onto a machine with Windows Vista.

Performing an Upgrade to Windows 7

If your machine has Windows Vista already installed, you have the ability to upgrade the machine to Windows 7.

Similar to a clean install, you can run the installation from the installation DVD or over a network. The only difference in the installation procedure is your starting point: from your optical drive or from a network share. The following steps assume that you are using the Windows 7 DVD to install the Windows 7 operating system.

NOTE You can't upgrade Windows XP to Windows 7 directly. I will discuss the tools used to install a Windows 7 operating system on a Windows XP machine later in this chapter.

Perform the following steps to go through the process of installing Windows 7 by upgrading Windows Vista:

1. Insert the Windows 7 DVD.
2. If Autorun does not start, go to the DVD drive and click `setup.exe`. After the setup starts (by the `setup.exe` or Autorun), click Install Windows 7.
3. You are prompted to update your current operating system. If you choose not to update, the installation might fail. You can also choose to send information to Microsoft during this process.
4. The Microsoft Windows 7 license terms will appear. The installation does not allow you to click Next until you have accepted the license terms.
5. You are prompted to select the type of installation you want to perform. Choose the Upgrade link.
6. You will see a compatibility report that alerts you of any applications or drivers that are not supported in Windows 7. Click Next.

During the Installing Windows Upgrade phase, all the files required by the Setup program are copied to the hard drive. During the process, the computer automatically reboots. This process takes several minutes and proceeds automatically without user intervention. The following process information messages appear on the screen along with a completion percentage for each:

1. Copying Windows files
2. Gathering files, settings, and programs
3. Expanding Windows files
4. Installing features and updates
5. Transferring files, settings, and programs

After your computer finishes copying files and reboots, you will be in the Setting Up Windows phase of the installation. Perform the following steps to complete the upgrade:

1. The first screen asks for your Windows product key. Type your 25-digit product key and click Next.
2. Settings related to Windows Update and security appear next. You can use the recommended settings, install important updates only, or have the computer ask you later.
3. On the next screen, you review your time and date settings. Set up your local time and date and choose if you want daylight savings time. Click Next.
4. The installation completes.

When you install Windows 7, you might run into setup problems or errors. Let's take a look at the troubleshooting process involved with Windows 7 installations.

Troubleshooting Installation Problems

The Windows 7 installation process is designed to be as simple as possible. The chances for installation errors are greatly minimized through the use of wizards and the step-by-step process. However, errors may occur.

Identifying Common Installation Problems

As most of you are aware, installations seldom go off without a hitch. Some of the possible installation errors that you might encounter are listed in Table 1.4.

Table 1.4: Troubleshooting Common Installation Problems

Error	Explanation/Possible Solutions
Media Errors	Media errors are caused by defective or damaged DVDs. To check the disc, put it into another computer and see if you can read it. Also check your disc for scratches or dirt—it might just need to be cleaned.
Insufficient Disk Space	Windows 7 needs at least 16 GB of free space for the installation program to run properly. If the Setup program cannot verify that this space exists, the program will not let you continue.
Not Enough Memory	Make sure that your computer has the minimum amount of memory required by Windows 7 (1 GB). Having insufficient memory might cause the installation to fail or blue-screen errors to occur after installation.
Not Enough Processing Power	Make sure that your computer has the minimum processing power required by Windows 7 (1 GHz). Having insufficient processing power might cause the installation to fail or blue-screen errors to occur after installation.
Hardware That Is Not on the HCL	If your hardware is not listed on the HCL, Windows 7 might not recognize the hardware or the device might not work properly.
Hardware with No Driver Support	Windows 7 will not recognize hardware without driver support.
Hardware That Is Not Configured Properly	If your hardware is Plug and Play–compatible, Windows 7 should configure it automatically. If your hardware is not Plug and Play–compatible, you need to manually configure the hardware per the manufacturer's instructions.
Incorrect Product Key	Without a valid product key, the installation will not go past the Product Key screen. Make sure that you have not typed an incorrect key (check your Windows 7 installation folder or your computer case for this key).

Table 1.4: Troubleshooting Common Installation Problems *(continued)*

Error	Explanation/Possible Solutions
Failure to Access TCP/IP Network Resources	If you install Windows 7 with typical settings, the computer is configured as a DHCP client. If there is no DHCP server to provide IP configuration information, the client will still generate an autoconfigured IP address but will be unable to access network resources through TCP/IP if the other network clients are using DHCP addresses.
Installing Nonsupported Hard Drives	If your computer is using a hard disk that does not have a driver included on the Windows 7 media, you will receive an error message stating that the hard drive cannot be found. You should verify that the hard drive is properly connected and functional. Obtain a driver for Windows 7 from the manufacturer and then specify the driver location by selecting the Load Driver option during partition selection.

Troubleshooting with Installation Log Files

When you install Windows 7, the Setup program creates several log files. You can view these logs files to check for any problems during the installation process. The following two log files are particularly useful for troubleshooting:

`setupact.log` The action log includes all the actions that were performed during the setup process and a description of each action. These actions are listed in chronological order. The action log is stored as `\Windows\setupact.log`.

`setuperr.log` The error log includes any errors that occurred during the installation. For each error, there is a description and an indication of the severity of the error. This error log is stored as `\Windows\setuperr.log`.

In the following steps you will view the Windows 7 setup logs to determine whether there were any problems with your Windows 7 installation.

Follow these steps to troubleshoot failed installations with setup logs:

1. Select Start ➢ Computer.
2. Double-click Local Disk (C:).
3. Double-click Windows.

4. In the `Windows` folder, double-click the `setupact.log` file to view your action log in Notepad. When you finish viewing this file, close Notepad.
5. Double-click the `setuperr.log` file to view your error file in Notepad. If no errors occurred during installation, this file will be empty. When you finish viewing this file, close Notepad.
6. Close the directory window.

After you install Windows 7 and look at the setup logs, it might be necessary to transfer user's data from one system to another or migrate data from the same computer. Let's take a look at the migration process.

Migrating Files and Settings

Rather than perform an in-place upgrade, you can choose to migrate your files and settings from an existing installation. In this case, you can use the User State Migration Tool (USMT) or Windows Easy Transfer.

User State Migration Tool

You can download a utility called the User State Migration Tool (USMT) that administrators use to migrate large numbers of users over automated deployments. The USMT for Windows 7 is now part of Windows Automated Installation Kit (Windows AIK). The USMT is similar to Windows Easy Transfer with the following differences:

- The USMT is more configurable and can use XML files to specify which files and settings are transferred.
- The USMT is scriptable and uses command-line utilities to save and restore user files and settings.

The USMT consists of two executable files, `ScanState.exe` and `LoadState.exe`, and three migration rule information files, `Migapp.xml`, `Migsys.xml`, and `Miguser.xml`. You can create a `Config.xml` file that specifies what should and should not be migrated. The purposes of these files are as follows:

`ScanState.exe` collects user data and settings information based on the configuration of the `Migapp.xml`, `Migsys.xml`, and `Miguser.xml` files and stores it as an image file.

`LoadState.exe` deposits the information that is collected to a computer running a fresh copy of Windows 7.

The information that is migrated includes the following:
From each user:

- Documents
- Video
- Music
- Pictures
- Desktop files
- Start Menu
- Quick Launch toolbar
- Internet Explorer Favorites

From the All Users profile:

- Shared Documents
- Shared Video
- Shared Music
- Shared Desktop files
- Shared Pictures
- Shared Start Menu
- Shared Internet Explorer Favorites
- Files with certain file types, including `.doc`, `.docx`, `.dot`, `.rtf`, `.txt`, `.wps`, `.wri`, `.xls`, `.csv`, `.wks`, `.ppt`, `.pps`, `.pot`, `.pst`, and more
- Access control lists (ACLs)

The USMT will not migrate hardware settings, drivers, passwords, application binaries, synchronization files, DLL files, or other executables.

Using the USMT

The USMT is downloadable software from Microsoft's website. In its simplest form, you use the USMT in the following manner:

1. Run `ScanState.exe` on the source computer. `ScanState.exe` will copy the user state data to an intermediate store. The intermediate

store (for example, a CD-RW) must be large enough to accommodate the data that will be transferred. `Scanstate.exe` would commonly be executed as a shortcut sent to users that they would deploy in the evening or through a scheduled script.

2. Install a fresh copy of Windows 7 on the target computer.
3. Run `LoadState.exe` on the target computer. `LoadState.exe` will access the intermediate store to restore the user settings.

When you use the USMT, you can create a script that can be run manually or can be used as an automated process at a scheduled time. Table 1.5 defines the options for the `Scanstate.exe` and `Loadstate.exe` commands.

Table 1.5: Options for `scanstate.exe` and `loadstate.exe`

Option	Description
`/config`	Specifies the `config.xml` file that should be used
`/encrypt`	Encrypts the store (`scanstate.exe` only)
`/decrypt`	Decrypts the store (`loadstate.exe` only)
`/nocompress`	Disables data compression
`/genconfig`	Generates a `config.xml` file but does not create a store
`/targetxp`	Optimizes ScanState for use with Windows XP
`/all`	Migrates all users
`/ue`	User exclude: excludes the specified user
`/ui`	User include: includes the specified user
`/uel`	Excludes user based on last login time
`/v verboselevel`	Used to identify what verbosity level will be associated with the log file on a scale of 0–13, with 0 the least verbose

Windows Easy Transfer

Windows 7 ships with a utility called Windows Easy Transfer that is used to transfer files and settings from one computer to another. You

can transfer some or all of the following files and settings from a computer running Windows XP with Service Pack 2 or Windows Vista:

- User accounts
- Folders and files
- Program settings
- Internet settings
- Favorites
- Email messages, contacts, and settings

You can transfer the migrated files and settings using the following methods:

- Easy Transfer Cable, which is a USB cable that connects to the source and destination computers
- CD or DVD
- Removable media, such as a USB flash drive or a removable hard drive
- Network share
- Direct network connection

You can password-protect the migrated files and settings if you use CDs, DVDs, removable media, or a network share. Now let's take a look at how to upgrade a Windows XP machine to Windows 7.

Upgrading from Windows XP to Windows 7

Because the upgrade option from Windows XP to Windows 7 is not available, you can use Windows Easy Transfer to integrate settings from Windows XP to Windows 7 on the same computer.

The first step in this migration process is to copy your files to a removable media such as an external hard drive or thumb drive or to a network share. After the installation of the Windows 7 operating system, you can then migrate these files onto the Windows 7 system.

Perform the following steps to migrate from Windows XP to Windows 7:

1. Insert the Windows 7 DVD while running Windows XP. If the Windows 7 installation window opens automatically, close it.
2. Open Windows Explorer by right-clicking the Start menu and then clicking Explore.

3. Browse to the DVD drive on your computer and click `migsetup.exe` in the `Support\Migwiz` directory.
4. When the Windows Easy Transfer window opens, click Next.
5. Select an external hard disk or USB flash drive.
6. Click This Is My Old Computer. Windows Easy Transfer scans the computer.
7. Click Next. You can also determine which files should be migrated by selecting only the user profiles you want to transfer or by clicking Customize.
8. Enter a password to protect your Easy Transfer file, or leave the box blank, and then click Save.
9. Browse to the external location on the network or to the removable media where you want to save your Easy Transfer file and then click Save.
10. Click Next. Windows Easy Transfer displays the filename and location of the Easy Transfer file you just created.

Perform the following steps to use the Windows 7 DVD to install the operating system:

1. Start Windows 7 Setup by browsing to the root folder of the DVD in Windows Explorer and then double-clicking `setup.exe`.
2. Click Go Online To Get The Latest Updates (Recommended) to retrieve any important updates for Windows 7. This step is optional. If you choose not to check for updates during Setup, click Do Not Get The Latest Updates.
3. Read and accept the Microsoft Software License Terms and then click Next. If you decline, Windows 7 Setup will exit.
4. Click Custom to perform an upgrade to your existing Windows installation.
5. Select the partition where you would like to install Windows. To move your existing Windows installation into a `Windows.old` folder and replace the operating system with Windows 7, select the partition where your current Windows installation is located.
6. Click Next and then click OK.
7. Windows 7 Setup will proceed without further interaction.

Now, perform the following steps to migrate files to the destination computer:

1. If you saved your files and settings in an Easy Transfer file on a removable media such as a universal flash device (UFD) rather than on a network share, insert the removable media into the computer.
2. Select Start ➢ All Programs ➢ Accessories ➢ System Tools ➢ Windows Easy Transfer.
3. When the Windows Easy Transfer window opens, click Next.
4. Click An External Hard Disk Or USB Flash Drive.
5. Click This Is My New Computer.
6. Click Yes, Open The File.
7. Browse to the location where the Easy Transfer file was saved. Click the filename, and then click Open.
8. Click Transfer to transfer all files and settings. You can also determine which files should be migrated by selecting only the user profiles you want to transfer, or by clicking Customize.
9. Click Close after Windows Easy Transfer has completed moving your files.

Once the migration process is complete, you should regain the disk space used by the Windows XP system by using the Disk Cleanup tool to delete the `Windows.old` directory.

Perform the following steps to use the Disk Cleanup tool:

1. Open Disk Cleanup by selecting Start ➢ All Programs ➢ Accessories ➢ System Tools ➢ Disk Cleanup.
2. Click Clean Up System Files.
3. Previous installations of Windows are scanned. After they are scanned, select Previous Windows Installation(s) and any other categories of files you want to delete.
4. Click OK and then click Delete Files.

An important decision that you should consider is whether to upgrade your Windows XP clients to Windows Vista first and then upgrade the machine to Windows 7.

As you have seen, you can migrate your users' data, but let's say you have software installed and you can't locate the CD/DVD for that software package. It might be beneficial to a user or organization to upgrade the Windows XP machine to Windows Vista. After that installation is complete, upgrade the Vista machine to Windows 7.

This is just another option that is available to you when you migrate your users to the Windows 7 operating system.

Another option you may choose is to run two different operating systems on the same computer system. Called dual-booting, this approach gives you the choice of which operating system you want to boot into when the system starts. Installing multiple operating systems onto the same computer is called dual-booting or multibooting.

Supporting Multiboot Options

You might want to install Windows 7 but still be able to run other operating systems. Dual-booting or multibooting allows your computer to boot multiple operating systems. Your computer will be automatically configured for dual- or multibooting if there was a supported operating system on your computer prior to the Windows 7 installation, you didn't upgrade from that operating system, and you installed Windows 7 into a different partition.

One reason for multibooting is to test various systems. If you have a limited number of computers in your test lab and you want to be able to test multiple configurations, you should multiboot. For example, you might configure one computer to multiboot with Windows XP Professional, Windows Vista, and Windows 7.

Here are some keys to successful multiboot configurations:

- Make sure you have plenty of disk space.
- Windows 7 must be installed on a separate partition in order to dual- or multiboot with other operating systems.
- If you want to support dual- or multibooting with Windows XP and Windows 7, Windows XP must be installed first. If you install Windows 7 first, you cannot install Windows XP without ruining your Windows 7 configuration. This requirement also applies to Windows 9*x*, Windows 2000, and Windows Vista.
- Never, ever upgrade to Windows 7 dynamic disks. Dynamic disks are seen only by Windows 2000, Windows XP Professional, Windows Server 2003, Windows Vista, and Windows 7, and

are not recognized by any other operating system, including Windows NT and Windows XP Home Edition.

- Only Windows NT 4.0 (with Service Pack 4), Windows 2000, Windows XP, Windows Vista, Windows 7, Windows Server 2003, and Windows Server 2008 can recognize NTFS file systems. Other Windows operating systems use FAT16 or FAT32 and cannot recognize NTFS. All Windows-based operating systems can recognize FAT partitions.
- If you will dual- or multiboot with Windows 9*x*, you must turn off disk compression or Windows 7 will not be able to read the drive properly.
- Do not install Windows 7 on a compressed volume unless the volume was compressed using NTFS compression.
- Files that are encrypted with Windows 7 will not be available to Windows NT 4.

After you install each operating system, you can choose the operating system that you will boot to during the boot process. You will see a boot selection screen that asks you to choose which operating system you want to boot.

The Boot Configuration Data (BCD) store contains boot information parameters that were previously found in `boot.ini` in older versions of Windows. To edit the boot options in the BCD store, use the bcdedit utility, which can be launched only from a command prompt.

Perform the following steps to open a command prompt window:

1. Launch `\Windows\system32\cmd.exe`.
2. Open the Run command by pressing Windows key+R.
3. Type **`cmd.exe`** in the Search Programs And Files box and press Enter.

After the command prompt window is open, type **`bcdedit`** to launch the bcdedit utility. You can also type **`bcdedit/?`** to see all the various bcdedit commands.

After the Windows 7 installation is complete, it's time to do some general housekeeping. The first thing you need to do is activate the Windows 7 operating system.

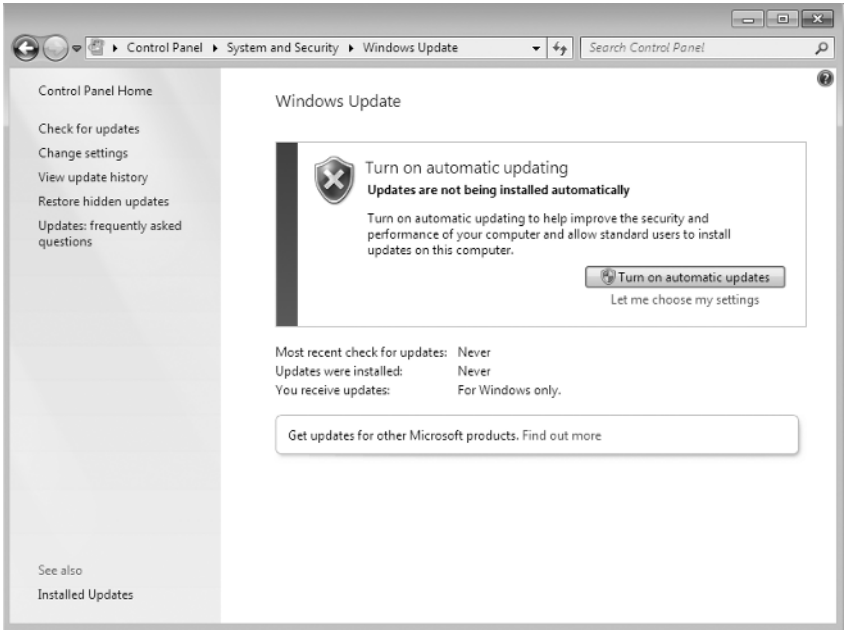
Using Windows Activation

Windows Activation is Microsoft's way of reducing software piracy. Unless you have a corporate license for Windows 7, you will need to perform postinstallation activation. You can do this online or by phoning Microsoft. Windows 7 will attempt automatic activation three days after you log on to Windows 7 for the first time. There is a grace period when you will be able to use the operating system without activation. After the grace period expires, you will not be able to create new files or save changes to existing files until Windows 7 is activated. When the grace period runs out, the Windows Activation Wizard automatically starts; it walks you through the activation process.

Using Windows Update

Windows Update, as shown in Figure 1.13, is a utility that connects to Microsoft's website and checks to ensure that you have the most up-to-date version of Microsoft products.

Figure 1.13: Windows Update



Here are some of the common update categories associated with Windows Update:

- Critical updates
- Service packs
- Drivers

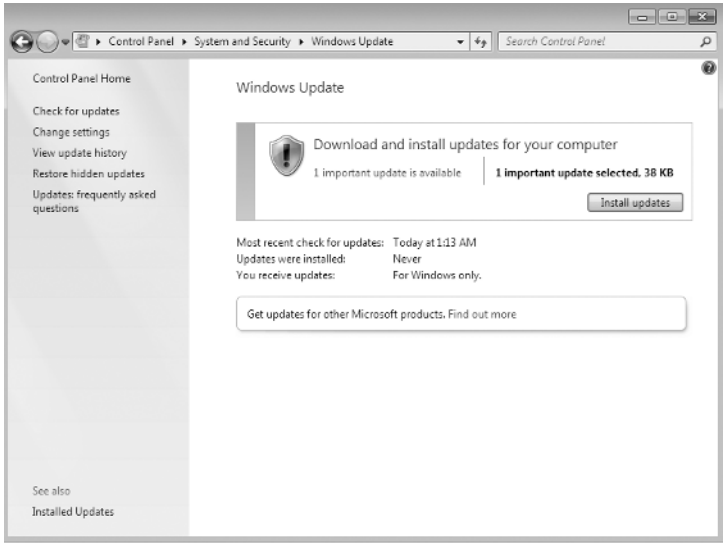
Perform the following steps to configure Windows Update:

1. Select Start ➢ Control Panel.
   - From Windows Icons View, select Windows Update.
   - From Windows Category View, select System And Security, Windows Update.
2. Configure the options you want to use for Windows Update, and click OK.

You can access the following options from Windows Update:

Check For Updates When you click Check For Updates, Windows Update retrieves a list of available updates from the Internet. You can then click View Available Updates to see what updates are available. Updates are marked as Important, Recommended, or Optional. Figure 1.14 shows a sample list of updates.

Figure 1.14: Checking for updates



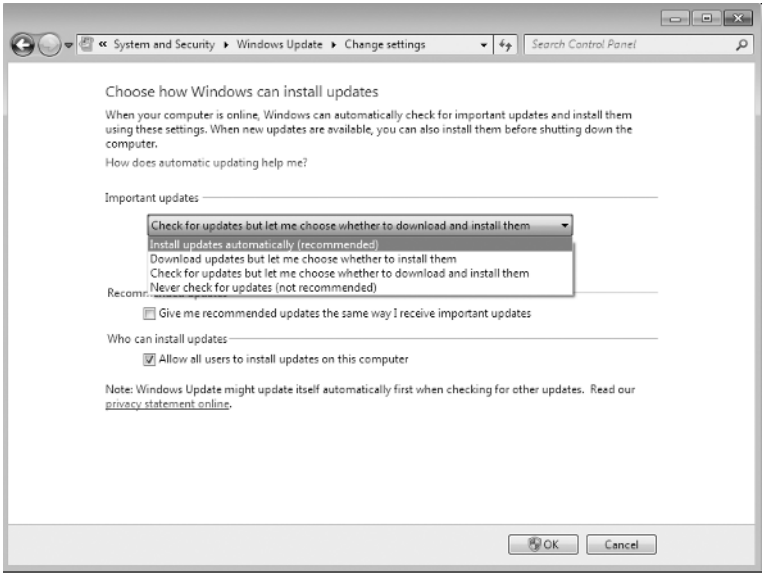
Change Settings Clicking Change Settings allows you to customize how Windows can install updates.

You can configure the following options:

- Install Updates Automatically (Recommended)
- Download Updates But Let Me Choose To Install Them
- Download Updates But Let Me Choose Whether To Download And Install Them
- Never Check For Updates (Not Recommended)

Figure 1.15 shows the settings that you can configure for Windows Update.

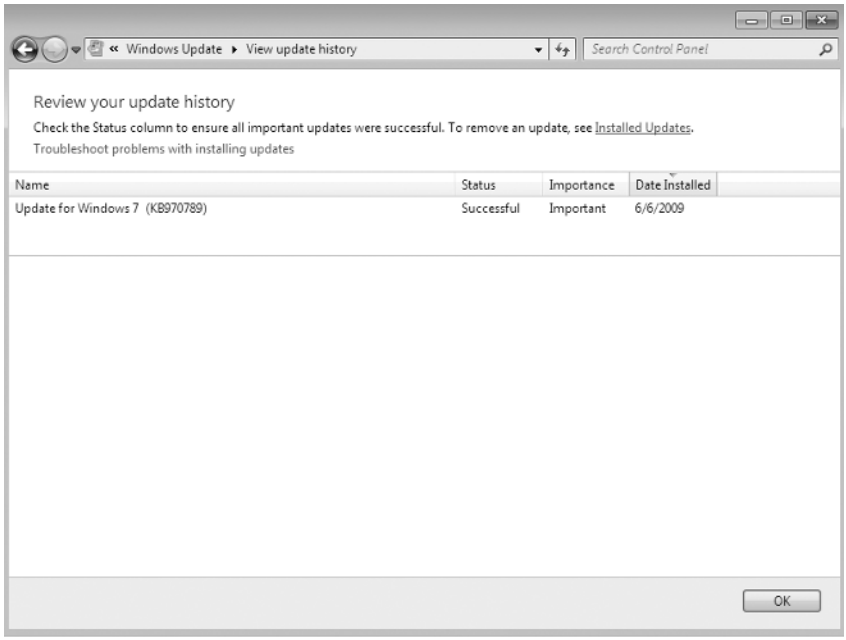
Figure 1.15: Changing settings in Windows Update



View Update History View Update History, as shown in Figure 1.16, is used to view a list of all the installations that have been performed on the computer. You can see the following information for each installation:

- Update Name
- Status (Successful, Unsuccessful, Or Canceled)
- Importance (Important, Recommended, Or Optional)
- Date Installed

Figure 1.16: Windows Update: View Update History



Restore Hidden Updates With Restore Hidden Updates, you can list any updates that you have hidden from the list of available updates. You might hide updates that you don't want users to install.

Sometimes it is important for you to test and verify the updates before your users can install the updates. This area allows you to see hidden updates so that they can be tested before deployment.

Updates: Frequently Asked Questions The Updates: Frequently Asked Questions link will bring up a help screen about updates. Common questions and answers are listed in this window.

Installed Updates Installed Updates allows you to see the updates that are installed and to uninstall or change them if necessary. The Installed Updates feature is a part of the Programs and Features applet in Control Panel, which allows you to uninstall, change, and repair programs.

Updates are important to keep your Windows 7 operating system current, but when Microsoft has many updates or security patches, they release service packs.

Installing Windows Service Packs

Service packs are updates to the Windows 7 operating system that include bug fixes and product enhancements. Some of the options that might be included in service packs are security fixes or updated versions of software, such as Internet Explorer.

Perform the following steps prior to installing a service pack:

1. Back up your computer.
2. Check your computer to ensure that it is not running any malware or other unwanted software.
3. Check with your computer manufacturer to see whether there are any special instructions for your computer prior to installing the service pack.

You can download service packs from Microsoft's website, receive service packs via Windows Update, or pay for a copy of the service pack to be mailed to you on disk. Before you install a service pack, read the Release Note that is provided for each service pack on Microsoft's website.